

## SOLAS France

by Remi Losno, V. Garçon and C. Guieu

### 1. Scientific Highlights and Achievements

The French SOLAS activities are funded by CNRS/INSU through the LEFE program (Fluid envelopes and environment) <http://www.insu.cnrs.fr/co/lefe>, by ANR (National Agency for Research) <http://www.agence-nationale-recherche.fr/Accueil>, by IPEV (Institut Paul Emile Victor) [http://www.institut-polaire.fr/ipev/programmes\\_de\\_recherche](http://www.institut-polaire.fr/ipev/programmes_de_recherche), but also by CNES and other funding institutions (IRD, CEA, etc..) and universities. The EU FP7 program also contributes.

The **DUNE** project (PI : Cécile Guieu, ANR; 2008-2010) aims at estimating the impact of atmospheric inputs on an oligotrophic ecosystem. After the successful 2008 experiment (artificial dust seeding in clean mesocosms; see report in SOLAS News, Issue 9, Spring 2009, 36-37), another field campaign with 7 mesocosms (52m<sup>3</sup> each) will take place this summer in the Scandola Preservation area (Corsica). <http://www.obs-vlfr.fr/LOV/DUNE/index.html>

The program **FLATOCOA** (PI: Rémi Losno, IPEV) devoted to the dust flux over the southern Ocean also started for 2 years of time series at Kerguelen Island. Dissolution experiments of aerosols were also continued by several teams. See [http://www.institut-polaire.fr/ipev/programmes\\_de\\_recherche/en\\_cours/1188\\_flux\\_atmospherique\\_d\\_origine\\_continental\\_e\\_sur\\_l\\_ocean\\_austral](http://www.institut-polaire.fr/ipev/programmes_de_recherche/en_cours/1188_flux_atmospherique_d_origine_continental_e_sur_l_ocean_austral)

The program **AEROTRACE** (PI: Jean Sciare, IPEV) includes process studies such as i) the quantitative role of sea salt aerosols in the direct radiative forcing of aerosols above our stations, ii) the chemical determination of the CCN (Cloud Condensation Nucleus) fraction with a special attention to organic aerosols of marine origin. Atmospheric survey a tour monitoring stations of Amsterdam and Crozet, chemical measurements performed at the WMO global station of Cape Point (South Africa). Latitudinal distribution of biogenic sulphur (DMS) emissions in the Southern Ocean. Results of the oceanographic cruises OOMPH, chemical measurements (ions, carbon) obtained from size-resolved measurements performed at Amsterdam Island and Impact of organic aerosols in the chemical composition of CCN. See [http://www.institut-polaire.fr/ipev/programmes\\_de\\_recherche/en\\_cours/415\\_observatoire\\_aerosols\\_et\\_traceurs\\_atmospheriques\\_dans\\_l\\_ocean\\_austral](http://www.institut-polaire.fr/ipev/programmes_de_recherche/en_cours/415_observatoire_aerosols_et_traceurs_atmospheriques_dans_l_ocean_austral)

The **ISLAND** project (PI: Eva Bucciarelli, LEFE) offers an integrated study on the interactions between iron limitation, phytoplanktonic growth, ecosystem structure, DMSP, DMS and DMSO production through a set of questions : 1) How iron limitation does affect DMSP, DMS and DMSO relative production? How does it affect DMS emission? What would be the global oceanic response to an iron fertilization?

**DRAKE** (ANT XXV-4) cruise (March-April 2009) across Drake Passage : CO<sub>2</sub> survey and aerosols measurements (deposition and trace gases emission) . The continental background of oceanic air masses has been determined through Drake Passage (PIs: C. Provost, V. Garçon, and R. Losno) To see the full list of projects (GRABISU (Dandonneau), BOA (Sarhou, Desboeufs), CARBOCEAN in Southern Ocean (Boutin) and tropical Atlantic (Lefèvre) , South Indian Ocean (Metzl) (ORE CARAUS/S.O.OISO) and North Atlantic (SURATLANTE), UVECO (Sempéré), ...) please consult [http://www.lisa.upscl.fr/SOLAS/Xiamen2007/0004Losno\\_SOLAS-France-an-overview.pdf](http://www.lisa.upscl.fr/SOLAS/Xiamen2007/0004Losno_SOLAS-France-an-overview.pdf)

**EPOCA** is an EU-FP7 funded program to document the effect of the acidification on the Ocean, including living organisms, and also the Earth system. Project coordinator is J.P. Gattuso. see <http://www.epoca-project.eu>.

**BOUM** (<http://www.com.univ-mrs.fr/BOUM/?lang=fr>) is working on the biogeochemistry of the Mediterranean Sea including the impact of nutrients on the carbon cycle through biological processes. The project leader is Thierry Moutin

### 2. Main activities (research projects, cruises, special events, workshops, outreach, capacity building etc)

During the year 2009 a joint meeting IMBER-SOLAS of the french community, took place on June 22-23, 2009 (see [http://www.imber.info/IMBER\\_SOLAS\\_home.html](http://www.imber.info/IMBER_SOLAS_home.html)) at University Paris Diderot in Paris. A "state of the art" of the SOLAS french activities was exposed there in details.

**Open Science Conference, Barcelona, Spain, November 2009:**

- 1 French invited speaker : Cécile Guieu (LOV, Villefranche sur Mer)-

- 3 Discussion sessions for SOLAS Mid-term Strategy initiatives led by French scientists (LEGOS: Véronique Garçon et Aurélien Paulmier, LA : Marc Mallet, LOV: Cécile Guieu, LMGEM : Richard Semperé)
- 2 Mid-term strategy initiatives led by the 2 french Members of the Scientific Steering Committee :
  - “Atmospheric control of nutrient cycling and production in the surface ocean”, Cécile Guieu (LOV), part of the FTI led by Mark Moore (Southampton, UK) and Matt Mills (Stanford, USA) : Upper Ocean Nutrient Limitation: processes, patterns and potential for change
  - “Air-sea gas fluxes in the Eastern Boundary Upwelling Systems and OMZ systems”, Véronique Garçon (LEGOS), Next launch Meeting : IMARPE, Lima, Peru, 8-10 November 2010
  - Several posters by French community, including poster National SOLAS activities set up by Rémi Losno (LISA, Paris)

**4<sup>th</sup> SSS, August 2009, Cargèse, Corsica, Institut d’Etudes Scientifiques.** Supported by CNES and CNRS/INSU (Ship time for practical workshops).

- French lecturers and direction of the School
- Participation of 6 to 10 French students each time (Brest, Grenoble, Marseille, Villefranche sur Mer, Orléans, Paris and Toulouse,..)

## EUROPEAN GEOPHYSICAL UNION:

Since 5 years, joint SOLAS/IMBER EGU Open Session led by at least one French scientist (Véronique Garçon, LEGOS)

## 3. Publications (Reports, articles, models, datasets, products, website etc)

The french SOLAS website is hosted at : <http://www.lisa.u-pec.fr/SOLAS/>

The list of articles, reports related to SOLAS is usually provided to the SOLAS IPO. See on the project web sites.

## 4. Goals and Plans for Future Activities

In the frame of MISTRALS ” <http://www.dt.insu.cnrs.fr/c-med/c-med.php>, 2 projects are directly related to SOLAS activities:

- CHARMEx “Chemistry-Aerosol Mediterranean Experiment” (PI: F. Dulac). <http://charmex.lsce.ipsl.fr/>
- MERMeX “Marine Ecosystems Response in the Mediterranean Experiment” (PIs: C. Guieu, X. Durieu de Madron and R. Sempéré. <http://mermex.com.univ-mrs.fr/>

Meetings 2010:

- 8-10 November at IMARPE, Lima, Peru : International Meeting on Air-sea gas fluxes at Eastern Boundary Upwelling and Oxygen Minimum Zones (OMZs) systems, SOLAS mid-term strategy initiative, led by Aurélien Paulmier and Véronique Garçon (LEGOS)
- A GEOTRACES Mediterranean Planning Workshop will take place 4-6 October 2010, Nice with goals to plan a GEOTRACES section in the Mediterranean and to setup the SOLAS-GEOTRACES cooperation in the Mediterranean (Host institution: Observatoire Océanologique de Villefranche sur mer).
- A SOLAS meeting “Atmospheric versus land based controls of nutrient cycling and production in the surface ocean: from fieldwork to modelling” has been proposed for funding by Cost Action 735. Org: C. Guieu and B. Salihoglu; to be held in Istanbul in Nov 2010.
- SOLAS sessions proposed at ASLO 2011 “Atmospheric control of nutrient cycling and production in the surface ocean” by C. Guieu, D. Wallace and C. Law, and “Biogeochemical, ecological and physical dynamics of eastern boundary upwelling zones” by C. Robinson and V. Garçon